PHYSICS education

Volume 9 1974
Pages 1–503

Published by
The Institute of Physics
London and Bristol

Copyright © 1974 by The Institute of Physics and individual contributors.
All rights reserved.

Multiple copying of the contents or parts thereof without permission is in breach of copyright. Permission is usually given upon written application to the Institute to copy illustrations and short extracts from the text of individual contributions provided the source (and, where appropriate, the copyright) is acknowledged.

Published by
The Institute of Physics
47 Belgrave Square, London SW1X 8QX

Printed in Great Britain by Leicester Printers Ltd. Set in 9/11pt Times

PHYSICS education

Honorary Editor

W F Archenhold BSc FInstP

Deputy Editors

B G Bignell BSc

J H Bowers BSc MInstP

J L Lewis MA FInstP

C W Thorpe BSc

Editorial Board

F B Beswick NB ChB

E Deeson BA MSc MInstP

P E Dutton MA MInstP

R E Ellis PhD

K W Hillier PhD FInstP

J A R Hughes BSc MInstP

G Jackson MA DIC CEng MIMechE AFRAeS

C P Ormell MA BLitt

D A Quadling MA FIMA

D A Tawney MA MInstP

C A Taylor PhD DSc FInstP

P Thomsen

E Töpfer

J A Turner PhD

A E Vines BSc MIBiol

Executive Editor

K F G Paulus BSc PhD MInstP

Staff Editor

N Warnock-Smith BSc MAIE

Advertisement Manager

S Sadler

Circulation Manager

M J S Beavis BSc

Contents of Volume 9

January 1974

The teaching of electromagnetic induction at sixth form level: W F ARCHENHOLD *5*
The teaching of electromagnetism at university level: J E HOULDIN *9*
Electric and magnetic units *13*
Chinese furnace: J HIGBIE *14*
More learning—less teaching? R W WHITWORTH *16*
Skill sessions: P H BLACK, J A R GRIFFITH and W B POWELL *18*
Minicourses in a first year physics laboratory: D BRANDT, M ANSELL and N B CRYER *23*
Line balancing in the Fabry–Perot experiment: G L ROGERS *27*
A low cost frequency modulated oscillator: K N R TAYLOR, M B ALLENSON and A R PIERCY *28*
Using analogue computers in schools: D J HINSON *30*
Muonium: E S GILLESPIE *34*
Physics on stamps: Appendix IV: E J BURGE *37*
Time dependent fluids: A A COLLYER *38*
Quasi-programmed laboratory demonstration: Electrostatic field plotting: P T SQUIRE *45*
An application of x rays used by English China Clays Group: J E BALL *47*
The black box principle: E M WRAY *50*
The dynamical theory of x ray diffraction: A A BALCHIN and C R WHITEHOUSE *53*
News and comment *1* Physics apparatus *52* Letters *59* Book reviews *64* Forthcoming conferences and courses *68*

March 1974

How do you teach heat in schools? ROBIN SHAW *73*
The measurement of temperature; Part 1: Temperature scales: A M FORREST *75*
A new curriculum; JOHN TEMPLE *77*
A simple apparatus for the determination of g by free fall: D S WALTON *80*
Teaching telescopes: JOHN S REID *82*
Swing and lift: FRANCIS H BARNES and ANN POTTER *87*
The DC8 as an exemplar of relevant physics: T K LOCKETT *94*
X ray topography: A A BALCHIN *97*
Transition probability and the ESR experiment: VINCENT J MCBRIETY *102*
The concept of shear stress in a solid material: M F CULPIN *104*
News and comment *69* Letters *107* Book reviews *113* Forthcoming conferences and courses *116*

May 1974

Physics courses in higher education
Editorial: W F ARCHENHOLD *117*
Introduction *119*
Courses in physics in England, Wales and Northern Ireland *125*
Courses in physics in Scotland *207*
Courses in Eire *216*
Courses in physics in medical colleges *217*
Index *222*

June 1974

A resource based learning system for practical work in science: P TURNER *228*
Antimatter and time reversed consciousness: JAMES D EDMONDS JR *231*
Playing at statistical mechanics: PAUL M CLARK, ALAN J WALTON and ANDREW J MILLINGTON *234*
Teaching by machine: PATRICIA CRYER *242*
The conversion of monochromator into a spectrograph: S GEORGE *244*
An inexpensive anechoic chamber: A DAGNALL *247*
The measurement of temperature: Part 2: Practical thermometry: ALLISTER M FORREST *251*
Thermal expansions in solids: J L LAWRENCE and

R C Pearson *254*
An experiment on specific heat of solids: H W Jones and B Morgan *257*
Physics based university courses: J L Beeby *261*
Equipotential surfaces and electric field lines: D A Richards *263*
Detection of the ether: A T Jackson *265*
An introduction to electronics using integrated circuits: D Francis *269*
The consistency of marking a physics examination: C James *271*
Edme Mariotte 1620–1684: B Davies *275*
News and comment *225* Physics apparatus *227* Letters *278* Book reviews *286* Forthcoming conferences and courses *292*

July 1974

Earth resources and their limitations: F M Broadhurst *297*
Playing at statistical mechanics: P M Clark, A J Walton and A J Millington *301*
Applications of electronic devices in the sixth form laboratory: J E Dyson *305*
A circle approach to the simple trigonometrical ratios and ac theory: M C Hately *308*
Understanding natural noise: L A Trinogga *310*
Viscoelastic fluids: A A Collyer *313*
The fitting of straight lines by the method of least squares: C Cooke *321*
Fourier transform spectroscopy: P F Christie, E Mathieson and G P Williams *324*
The Fourier transformer: N W F Stephens and G L Rogers *331*
Mach's principle: T P Swetman *336*
Mechanics of the human body during a tucked somersault: T A Philpot *338*
The transformation from terrestrial to celestial coordinates: D A Richards *343*
Comprehension and data assessment tests in physics examinations: B D Harland *346*
Basic mathematics background of students in the one year non-calculus physics course in the USA: S George *350*
Where angels fear to tread: A J M Smyth *352*
Weight and centrifugal force: K Taylor *357*
Extending the scope of diffraction experiments: M I Darby and N Morton *361*
News and comment *293* Physics apparatus *334* Letters *363* Book reviews *366* Forthcoming conferences and courses *368*

September 1974

Teaching electrostatics in schools: J M Gregory *371*
Teaching electrostatics in university courses: J F Hughes *375*
Modern electrostatics: A W Bright *381*
Physics and fundamentals of charged particles: B Makin *389*
An electronic gold leaf electroscope: G R Davies *393*
The future of physics in Scottish schools: J T Jardine, J K McIntyre and K J Standley *399*
The use of computers in teaching statistical physics at Nuffield A level: P H Bligh *403*
A simple demonstration of the piezoelectric effect: T W Eaton and L S D Fuller *409*
Photoelasticity without polaroids: M M Bond and D W Hadley *411*
The pocket calculator in school physics: J M Osborne *414*
The electronic calculator: Eric Deeson *419*
An integrated electronics course for undergraduate physicists: R V Aldridge *422*
An inclined plane paradox: M Salete, S C P Leite and C A N Conde *426*
News and comment *369* Letters *429* Book reviews *429* Forthcoming conferences and courses *432*

November 1974

Introducing quantum physics: Jon Ogborn *436*
Elementary concepts of quantum theory: J W Warren *444*
Quantum mechanics from the cradle?: John L Martin *448*
Maskelyne's Schehallien experiment of 1774: G S Leadstone *452*
A simple apparatus to demonstrate the Peltier effect: R C Dougal *458*
The effect of syllabus on mathematical knowledge: C G Belsom and L R B Elton *462*
A quasi-practical interstellar rocket trip: James D Edmonds jr *464*
Audio–visual for physics: Eric Deeson *468*
A simple voltage-to-frequency converter: F. Morris *472*
An Aladdin's cave for physicists?: J Caudwell and P E Dutton *477*
Projects in musical acoustics: Ian Firth *479*
A simple determination of the nuclear mass of deuterium: T W Eaton and R Smith *485*
Radioactive decay chains—an electronic analogue: G R Evans *487*
News and comment *433* Physics apparatus *435* Letters *490* Book reviews *494* Film reviews *495* Forthcoming conferences and courses *496*